

The opinion in support of the decision being entered today was *not* written for publication and is *not* binding precedent of the Board.

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte RONALD L. PANTER and THOMAS A. HEROLD

Appeal 2007-0174
Application 09/780,303
Technology Center 1754

Decided: December 15, 2006

Before EDWARD C. KIMLIN, CHUNG K. PAK, and
THOMAS A. WALTZ, *Administrative Patent Judges*.
KIMLIN, *Administrative Patent Judge*.

DECISION ON APPEAL

This is an appeal from the final rejection of claims 9-17 and 20-27. Claims 1-8, 18, and 19 have been allowed by the Examiner, and claims 28-38 stand withdrawn from consideration. Claim 9 is illustrative:

9. A method for making carbon fibers, the method including the steps of:

- providing an elongated precursor fiber;
- providing a plurality of furnaces disposed adjacent one another in a serial side-by-side relationship and configured to heat the fiber to different respective temperatures as the fiber is drawn through the furnaces;

stabilizing the precursor fiber by heating the precursor fiber in an oxidizing environment as it is drawn through respective heating chambers of an initial group of the plurality of furnaces while applying tension to the precursor fiber; and

continuously carbonizing the stabilized fiber by further heating the fiber in an oxidizing environment as it is drawn through the heating chamber of a final one of the plurality of furnaces.

The Examiner relies upon the following references as evidence of obviousness:

Pepper	US 4,526,770	Jul. 2, 1985
Berkebile (deceased)	US 5,316,654	May 31, 1994
McCullough	US 5,700,573	Dec. 23, 1997
Uchida	US 5,733,484	Mar. 31, 1998

Appellants' claimed invention is directed to a method for making carbon fibers from an elongated precursor fiber utilizing a plurality of furnaces disposed adjacent to one another in a serial side-by-side relationship. The precursor fiber is first stabilized by heating in an oxidizing environment as the fiber is drawn through an initial group of furnaces, and is then stabilized by heating the fiber in an oxidizing environment as it is drawn through the heating chamber of a final one of the plurality of furnaces.

Appealed claims 9, 13-17, 20-24, and 27 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Pepper in view of Uchida. Claims 10-12 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over the stated combination of references further in view of Berkebile. Also,

claims 25 and 26 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Pepper in view of Uchida and McCullough.

Appellants have not set forth separate arguments for any particular claim in the separately rejected groups of claims. Nor have appellants advanced separate substantive arguments for the separate § 103 rejections of claims 10-12 and 25-26, respectively. For the separate § 103 rejections of claims 10-12 and 25-26 appellants simply rely upon the arguments set forth for independent claim 9, upon which claims 10-12 and 25-26 depend. Accordingly, all the appealed claims stand or fall together, and we will limit our consideration to the examiner's § 103 rejection of claim 9.

We have thoroughly reviewed each of Appellants' arguments for patentability. However, we are in complete agreement with the Examiner that the claimed subject matter would have been obvious to one of ordinary skill in the art within the meaning of § 103 in view of the applied prior art. Accordingly, we will sustain the Examiner's rejections for essentially those reasons expressed in the Answer, and we add the following primarily for emphasis.

Appellants do not dispute the Examiner's factual determination that Pepper, like Appellants, discloses a method for making carbon fibers which includes stabilizing the precursor fiber by heating it in an oxidizing environment under tension, and then continuously carbonizing the stabilized fiber by further heating it in a final one of a plurality of furnaces. As

recognized by the Examiner, Pepper carbonizes the stabilized fiber in a non-oxidizing atmosphere rather than in the claimed oxidizing atmosphere.

However, as properly pointed out by the Examiner, Uchida provides the requisite evidence that one of ordinary skill in the art would have found it obvious to employ an oxidizing environment in the carbonizing furnace of Pepper as an alternative to a non-oxidizing atmosphere. In relevant part, Uchida discloses the following:

Regarding the atmosphere of this case, calcination is preferably performed in a vacuum or under a reduced pressure, or a non-oxidizing atmosphere of nitrogen gas, argon gas, helium gas, or the like under a reduced pressure, elevated pressure, or normal pressure. The calcination can be performed even in an oxidizing atmosphere, e.g., air, as far as it is performed at a comparatively low temperature, e.g., 400° to 600° degrees C., within a short period of time.

Uchida at col. 6, ll. 5-12. Accordingly, based on the collective teachings of Pepper and Uchida, we have no doubt that one of ordinary skill in the art would have found it obvious to resort to the option of using an oxidizing atmosphere in the carbonizing furnace of Pepper. Also, we agree with the Examiner that the optional use of an oxidizing atmosphere taught by Uchida would have offered the obvious advantages of avoiding the higher cost of inert gases and higher operating temperature.

Appellants offer no rationale, based on factual evidence or scientific reasoning, why one of ordinary skill in the art would have been dissuaded from using an oxidizing atmosphere in the carbonizing furnace of Pepper. Rather, the Appellants maintain that the Examiner has not identified either

an explicit teaching or an implicit suggestion to modify or combine the teachings of Pepper and Uchida. According to Appellants, “[i]dentifying an advantage merely shows that, in hindsight, there’s an advantage to combining the elements [but] does not show an implicit suggestion” (principal Br. 7, last paragraph). However, as explained by the Examiner, inasmuch as both Pepper and Uchida are directed to the same field of endeavor, namely, processing carbon preform fibers into carbon fibers through stabilization and carbonization, the references are from an analogous art and, thereby, combinable. Being properly combinable, it is appropriate to look to the explicit teaching in Uchida regarding the optional, alternative use of either an oxidizing or non-oxidizing atmosphere in a carbonization furnace of the type disclosed in Pepper. Also, we find that the motivation articulated by the Examiner is in accordance with the logic and sound scientific reasoning that Appellants acknowledge is a valid basis for establishing motivation (see footnote at page 2 of Appellants’ Reply Brief).

As a final point, we note that Appellants base no argument upon objective evidence of nonobviousness, such as unexpected results, which would serve to rebut the prima facie case of obviousness established by the Examiner.

In conclusion, based on the foregoing and the reasons well stated by the Examiner, the Examiner’s decision rejecting the appealed claims is affirmed.

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No time period for taking any subsequent action in connection with this appeal may be extended under 37 CFR § 1.136(a)(1)(iv) (2004).

AFFIRMED

clj

Reising, Ethington, Barnes, Kisselle,
Learman & McCulloch, P.C.
P.O. Box 4390
Troy, MI 48099